

original article**A DIAGNOSIS OF SALIVARY GLAND LESIONS BY FINE NEEDLE ASPIRATION CYTOLOGY AND ITS HISTOPATHOLOGICAL CORRELATION****Dr. Krishna Gajera¹,**

¹Second year resident Pathology, Department of Pathology, AMC MET Medical College, LG Hospital, Maninagar, Ahmedabad, Gujarat, India.

Dr. Jalak Patel²,

²First year resident Pathology, Department of Pathology, AMC MET Medical College, LG Hospital, Maninagar, Ahmedabad, Gujarat, India.

Dr. Jayshree M. Shah³

³Professor and Head of Department of Pathology , Department of Pathology, AMC MET Medical College, LG Hospital, Maninagar, Ahmedabad, Gujarat, India.

ABSTRACT**BACKGROUND:**

Salivary gland swellings can result from tumors, an inflammatory process or cyst. Fine needle aspiration cytology(FNAC) is a diagnostic tool for evaluating neoplastic and non neoplastic swelling of salivary gland. The objective of this study was to evaluate the diagnostic accuracy and sensitivity and specificity of fine needle aspiration cytology in numerous salivary gland lesions and with its histopathological correlation.

METHOD: The study was conducted in department of pathology; Amc met medical college, Ahmedabad, Gujarat, India, for duration of 1 year from January 2019 to January 2020. During the study period 44 cases of fine needle aspiration cytology of salivary gland lesions were performed. Formalin fixed (10%), surgically resected specimens were received and prepared for histopathological salivary gland lesion diagnosis.

RESULT: During the study period 998 FNAC were undertaken of which 44 FNAC were of salivary gland swelling. Correlation of cytology from FNAC with histopathology tissue was possible in 9 cases, for which FNAC data was available. 62 % were from male and 38 % were from female patients. The age of patient ranged from 8 to 85 Years. 15 cases were benign swellings. 8 cases were malignant, 7 cases were cysts and 14 cases had an inflammatory etiology.

CONCLUSION:

Fine needle aspiration cytology (FNAC) is highly sensitive and specific procedure for diagnosis of salivary gland lesions.

KEY WORDS:

Salivary gland, Benign, Malignant, FNAC, Histopathology, Diagnostic accuracy.

INTRODUCTION:

The salivary gland system includes three pairs of major glands – parotid, submandibular and sublingual and many minor glands in the submucosa of oral cavity. Minor salivary glands can be found in the lips, floor of the mouth, gingival, cheek, hard and soft palate, tongue, tonsillar areas and oropharynx. ⁽¹⁾ The lesions of salivary glands are commonly encountered clinical problems. They range from non neoplastic lesions to benign and malignant tumors.⁽²⁾ FNAC has been widely used as a diagnostic tool for the management of various head and neck lesions.⁽³⁾ It is minimally invasive, easy to perform technique. The smear evaluation is immediate and the procedure can be repeated many times to obtain more tissue for diagnosis or special investigations.^(4,5) Among the primary epithelial tumors, 36% occurs in parotid glands, 54% occurs in submandibular glands, 9% occurs in the sublingual gland and less than 1% occur in minor salivary gland.⁽⁶⁾ A review of the recent reported series found that the diagnostic sensitivity of FNAC varied from 81-100% that the specificity varied from 94-100% and that the diagnostic accuracy varies from 61-80%. ^(7, 8) Hence, the appropriate therapeutic management could be planned earlier, whether it was local excision for benign neoplasm, conservative management for non-neoplastic lesions, radical surgery for malignant tumors and chemotherapy or radiotherapy for metastatic and lymphoproliferative disorders.⁽⁹⁾

AIMS AND OBJECTIVES:

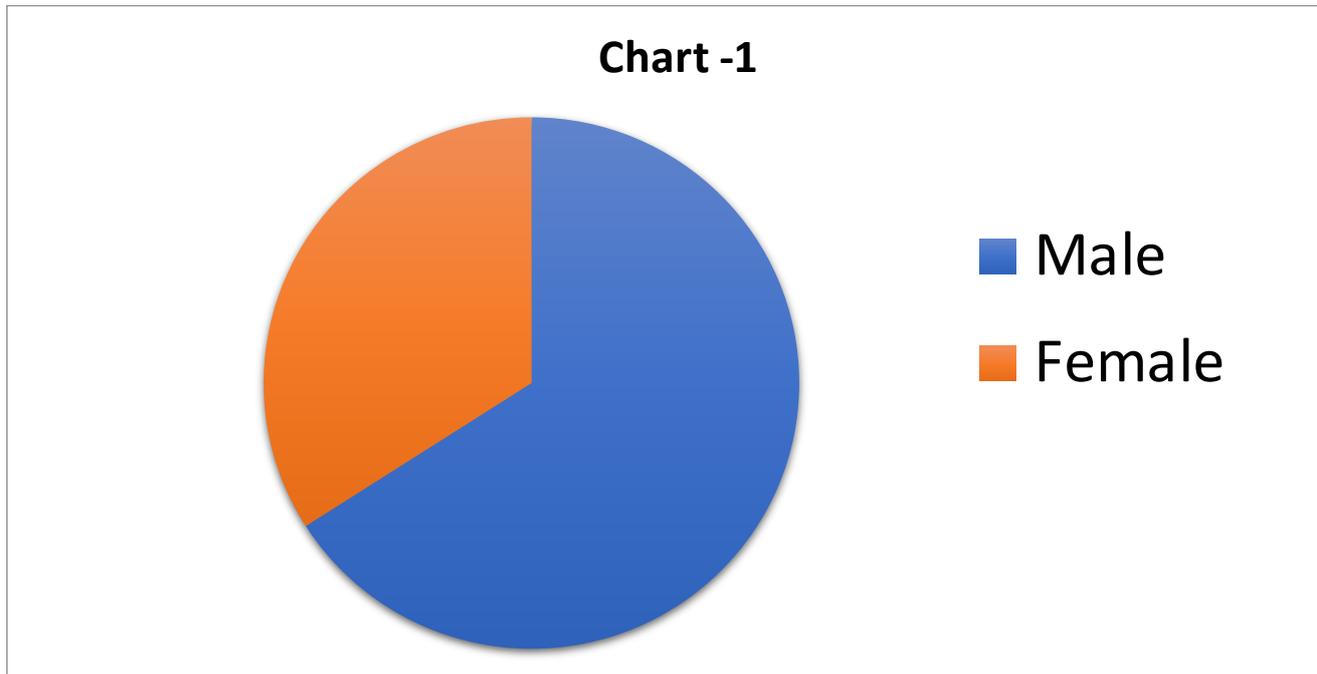
- 1) To correlate between FNAC and histopathological diagnosis of salivary gland lesions.
- 2) To find out sensitivity and specificity of FNAC procedure in salivary gland lesions in our AMC MET medical college.
- 3) To identify etiology of salivary gland swelling in our institution.

MATERIAL AND METHODS:

The present study was undertaken from January 2019 to January 2020 at the AMC MET MEDICAL COLLEGE, AHMEDABAD, which comprised of 44 cases of salivary gland tumors which were diagnosed by FNAC. The nodule of interest was palpated and fixed with the thumb and index finger of one hand. Under aseptic precautions, a 10cc syringe with a 22-25 gauge needle was introduced into the nodule. The material was aspirated and smears onto clean slides. The air dried and methanol fixed smears were stained with H and E stain. Formalin (10%) fixed specimens were received in the department of pathology, processed and stained with H and E for Histopathological examination.

RESULT:

During this period total 998 FNACs were performed in the department of which 44 FNACs were on salivary gland swelling of all FNAC.



In total salivary gland lesions 62% were from male and 38% were from female.

Table 1- Total 44 FNAC samples were diagnosed 15 cases as benign , 08 cases as malignant , 07 cases as cyst origin and 14 cases were inflammatory origin.

Lesions	No of cases	% of cases
Benign	15	34.09%
malignant	08	18.18%
Inflammatory	14	31.81%
Non-neoplastic cyst	07	15.90%
Total	44	100%

In our study the most common salivary gland lesion was the sub mandibular gland followed by parotid gland and followed by minor salivary glands by FNAC method.

Table -2 Distributions of subjects by age, sex and site of lesion.

AGE	SEX		TOTAL	SITE OF LESIONS		
	MALE	FEMALE		PAROTID	SUBMANDIBULAR	MINOR SALIVARY GLAND
1-10	1	1	2	0	2	0
11-20	3	1	4	1	3	0
21-30	4	5	9	2	7	0
31-40	1	5	6	1	5	0
41-50	7	2	9	6	1	2
51-60	7	2	9	4	5	0
61-70	2	1	3	2	1	0
71-80	0	0	0	0	0	0
81-90	2	0	2	1	1	0
TOTAL	27	17	44	17	25	02

Table -3 Cases of correlation between FNAC and Histopathological diagnosis of salivary gland lesions:

SR. NO.	FNAC DIAGNOSIS	HISTOPATHOLOGICAL DIAGNOSIS
1	Pleomorphic adenoma	Pleomorphic adenoma
2	Koch's Lymphadenitis	Tuberculous lymphadenitis
3	Mucoepidermoid carcinoma	High grade mucoepidermoid carcinoma
4	Cellular pleomorphic adenoma	Cellular pleomorphic adenoma
5	Pleomorphic adenoma	Pleomorphic adenoma
6	Warthin's tumor	Warthin's tumor
7	Pleomorphic adenoma	Pleomorphic adenoma
8	Reactive lymphadenitis	Chronic Sialadenitis
9	Granulomatous Inflammation	Tuberculous lymphadenitis

--	--	--

DISCUSSION:

Fine needle aspiration cytology (FNAC) of the salivary gland is a simple and quick procedure in the diagnosis of both neoplastic and non neoplastic lesions of the salivary gland⁽¹⁰⁾ In our study the age of the patients ranged from 8-85 years. The (36.79%) maximum numbers of cases investigated by FNAC were seen between ages of 41-60 year. While in other study maximum numbers of cases between ages of 21-40 year other studies. ^(11, 12)In our study, the male to female ratio was 03:01. The submandibular glands were the commonly studied gland in the present study, next in frequency was the parotid glands and then the minor salivary gland. In the present study, 44 cases were diagnosed as FNAC as being neoplastic conditions in which 36 (81%) benign and 08 (19%) were malignant. This was comparable with other studies, 80% benign vs 20% malignant⁽¹³⁾ In our study 31.81% cases were diagnosed by FNAC as being inflammatory while Goh and Sethi⁽¹⁴⁾ showed 53.7%, which is very high and Ashraf A et al⁽¹⁵⁾ shows 12% in their studies. There were 07(15.90%) cases diagnosed by FNAC as nonneoplastic cysts in our study and previous studies results are comparable to this; for example 10 (9%) cases in Arshad et al⁽¹⁶⁾ and 3 (7.5%) cases in Akhtar J et al.⁽¹⁰⁾

CONCLUSION:

FNAC offers valuable results which are not obtained by any other techniques. It is highly sensitive and specific technique for diagnosis of most salivary gland lesions. FNAC can be used preoperatively to avoid needless surgery.

REFERENCES:

1. Juan Rosai- Major and minor salivary glands. In: Michael Houston ed. ROSAI AND ACKERMAN'S Surgical Pathology. 9th ed. El-sevier India Private Limited, 2004:873-916.
2. Auclair PL, Ellis GL, Gnepp DR- salivary gland neoplasm: General Considerations. In: Ellis GL, Auclair PL, Gnepp DR, ed. Surgical pathology of the Salivary Glands- Major Problems in
3. Atula T, Greenman R, Laippala P, Klemi PJ. Fine needle aspiration biopsy in the diagnosis of parotid gland lesions: evaluation of 448 biopsies. *Diagn Cytopathol.* 1996;15(3):185-90.
4. Sauer T, Freng A, Djupesland P. Immediate interpretation of FNA smears of the head and neck region. *Diagn Cytopathol.* 1992;8(2):116-22.
5. MacLeod CB, Frable WJ. Fine-needle aspiration biopsy of the salivary gland: problem cases. *Diagn Cytopathol.* 1993;9(2):216-24.

6. Fernandes GC, Pandit AA. Diagnosis of salivary gland tumors by FNAC. *Bombay Hospital Journal* 2000; 42:108-11.
 7. Stewart CJ, MacKenzie K, McGarry GW, Mowat A. Fine-needle aspiration cytology of the salivary gland: a review of 342 cases. *Diagn Cyto-pathol* 2000; 22:139- 146.
 8. Zbaren P, Nuyens M, Loosli H, Stauffer E. Diagnostic accuracy of fine-needle aspiration cytology and frozen sections in primary parotid carcinoma. *Cancer* 2004;100:1876-1883 .
 9. Cohen MB, Fisher PE, Holly EA, Lowhagen T. Fine needle aspiration bi-opsy diagnosis of mucoepidermoid carcinoma. Statistical analysis. *Acta Cytol* 1990; 34:43–49.
 10. Akhter J, Hirachand S, Lakhey M. Role of FNAC in the diagnosis of salivary gland lesions. *Kathmandu Univ Med J (KUMJ)* 2008; 6: 204-208.
 11. Lingen MW, Kumar V. Head and neck. In: Robbins' and Cotran. *Pathological basis of disease*, 7th edn. Kumar V, Abbas AK, Fausto N. (eds). Philadelphia: Elsevier Saunders; 2005: 791-794.
 12. Rosai J. Major and minor salivary glands. In: *Ackerman's surgical pathology*. Volume 1. 9th edn. Rosai J. (eds). New York: CV Mosby Co; 2004: 639-669
 13. Cajulis RS, Gokaslan ST, , Frias-Hidvegi D. Fine needle aspiration biopsy of the salivary glands. *Acta Cytol* 1997; 41: 1412-1420.
 14. Goh YH, Sethi DS. Submandibular gland excision: a five year review. *J Laryngol Otol* 1998; 112: 269-273.
 15. Ashraf A, Shaikh AS, Kamal F, Sarfraz R, Bukhari MH. Diagnostic reliability of FNAC for salivary gland lesions: *Diagn Cytopathol* 2010; 38: 499-504.
 16. Arshad AR. Parotid swellings: report of 110 consecutive cases. *Med J Malaysia* 1998; 53: 417-422.
-